ARTIMIS Partnerships

KENTUCKY TRANSPORTATION CABINET

for the

2002 NATMEC

in Orlando, Florida

by

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Division of

Multimodal Programs

Presentation Overview

- ARTIMIS - Background/FAQs
- Archived Data
  - Original Archived Data Plan
  - Revised Archived Data Plan
  - Related Data Archiving Activities
- Future Directions

ARTIMIS: Background

- **The Advanced Regional Traffic Interactive Management & Information System**
- **Cincinnati-Northern Kentucky Region**
- **Incident, congestion & freeway management**
- **88 miles of highways**
- **Started in 1995, Feasibility Study in 1987,**
- **Preliminary Design in 1993**
- **1st major ITS effort in Ohio & 2nd in KY**

The Advanced Regional Traffic Interactive Management & Information System

- Policy Committee: KYTC, ODOT, OKI, Cincy, NKY Plan Comm., FHWA
- Funded primarily via CMAQ, also CVS (vans),
- 80+ cameras, 57 miles fiber, 1100 detectors, 40 fixed DMSs, 2 HARs, 5 patrol vans, Control Center in Downtown Cincy
- Travel Advisory Number: 511
- Web site: **http://www.artimis.org/**

ARTIMIS Goals

- Improving
  - motorist safety
  - travel times
  - air quality

Traffic Conditions

Archived Data Plan

- Original Plan
  - Card 3 (FHWA Traffic Volume)
  - Card C (FHWA Vehicle Classification)
- Also Segment and Incident Files
- Data Provided via CD
- No real quality control
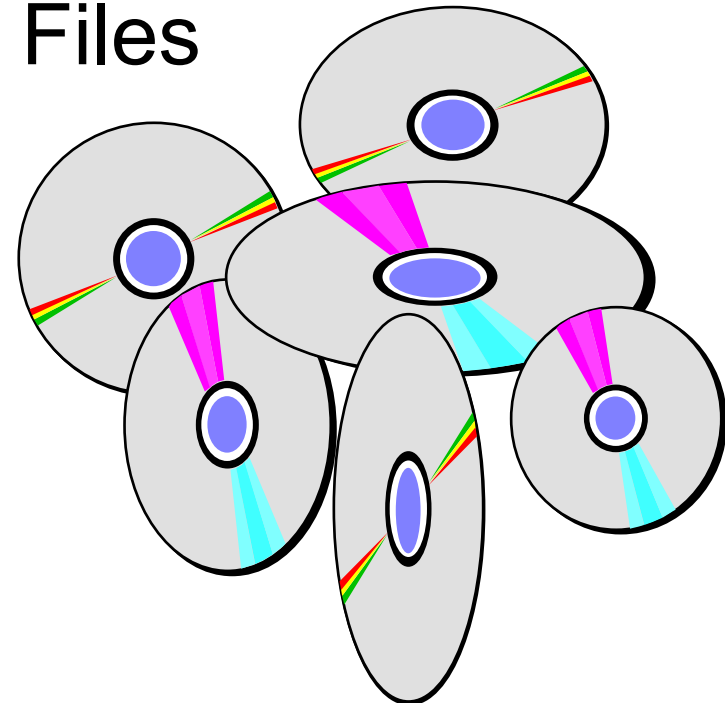
Current Data Files

- Card 3 File: Volume by direction/lane for all locations per hour in FHWA format

- Segment File: Speed, volume, occupancy, sample percentage per 15 minutes, 24-hour file

- Incident Snapshot File: Speed, volume, occupancy per 30 seconds, 15-minute file

- Card C File: Vehicle classification by direction/lane per hour.

Traffic Monitoring Guide

U.S. Department of Transportation
Federal Highway Administration

Office of Highway Policy Information

Additions to Original Plan

- **Data available at ftp site for each month: *ftp://208.237.57.131/***

- **Vehicle classification data collection with axle sensors failing**

- **High amount of missing data due to loop failures and polling failures**

- **Card 3 has construction flag in last field**

- **Analysis primarily with Excel & SAS**

Revised Data Archiving Plan

- New Data Formats
  - V Card
  - S Card
  - L Card
- Computer Programming
  - Pre Designed Queries & Reports
- Data Web Page
- Data Collection Investigation: 170s vs. TMS equipment
- GIS Coverage

New Data Cards

- New data cards may be basis for other ITS systems in KY & OH & other states(?)

- L-Card

  – Length-based vehicle classification

  – 24 sites with double loops

  – Data in 60-minute increments by lane

  – KYTC may convert to 13-bin FHWA format for submittal to OHPI

Length Based Classification Boundaries

Primary Description of Vehicles Included in the Class	Lower Length Bound >	Upper Length Bound < or =
Passenger vehicles (PV)	0 m (0 ft)	3.96 m (13 ft)
Single unit trucks (SU)	3.96 m (13 ft)	10.67 m (35 ft)
Combination trucks (CU)	10.67 m (35 ft)	18.59 m (61 ft)
Multi-trailer trucks (MU)	18.59 m (61 ft)	36.58 m (120 ft)

New Data Cards

- S-Card
  - Speed data
  - Data in 60-minute increments
- V-Card
  - Volume data
  - Similar to existing Card 3 format
  - Data in 5-minute increments by lane
  - Use of TTI quality control checks
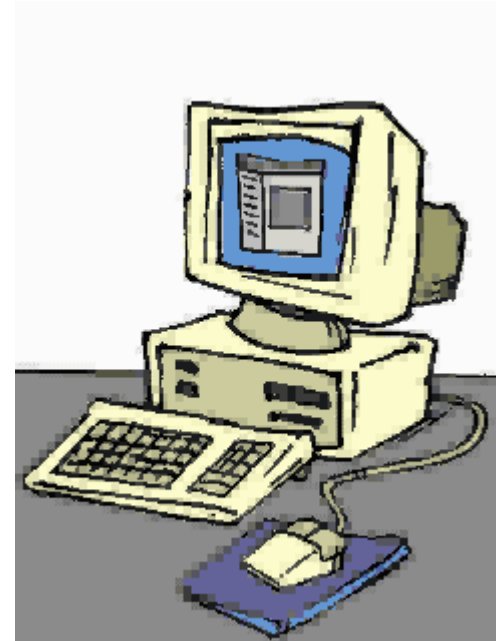
Revised Data Archiving Plan

- Computer programming
  - Create new data formats
  - Create pre-designed queries/reports

- Data web page
  - Queries/reports for historical data
    - ADTs
    - Truck percentages
    - Speed summaries
    - Queuing/delay data
  - Downloads
  - Good example:

Revised Data Archiving Plan

- Equipment Investigation
  - 170s not good on classification data
  - Use off the shelf traffic counter
  - Need to collect occupancy data
- GIS Coverage
  - Spatial analysis could maximize value of archived data
  - Obstacles: different software (3 different agencies), Operations typically doesn't use GIS

Related Data Archiving Activities

- Mobility Monitoring Study: TTI & Cambridge Systematics

- ASTM Standards: Development of Traffic Monitoring Archived Data Standards

- FHWA Analysis of ARTIMIS Data: Office of Highway Policy Information

- Feedback to Other ITS Systems in Area: TRIMARC, Central Kentucky

- Research: KYTC on archived data; TRB (maybe) on speed monitoring

Mobility Monitoring Study

- FHWA Sponsored, Research by TTI and Cambridge Systematics

- Real-time traffic data from 10 TOCs in 2000 including ARTIMIS

- Production of mobility and reliability measures

- Cambridge also did SAS analysis of traffic volumes for KYTC

- **http://mobility.tamu.edu/mmp/**
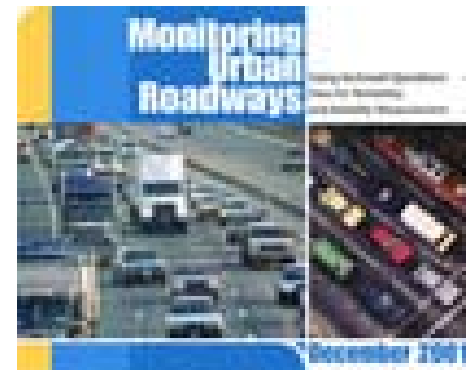
Mobility Monitoring Study

- Quality feedback
  - Data 42% complete
  - Data processed 38% complete
- Performance measures likely to supplement traditional v/c ratio in KY

Exhibit B-5. Delay by Day of Week

Mobility and Reliability Data
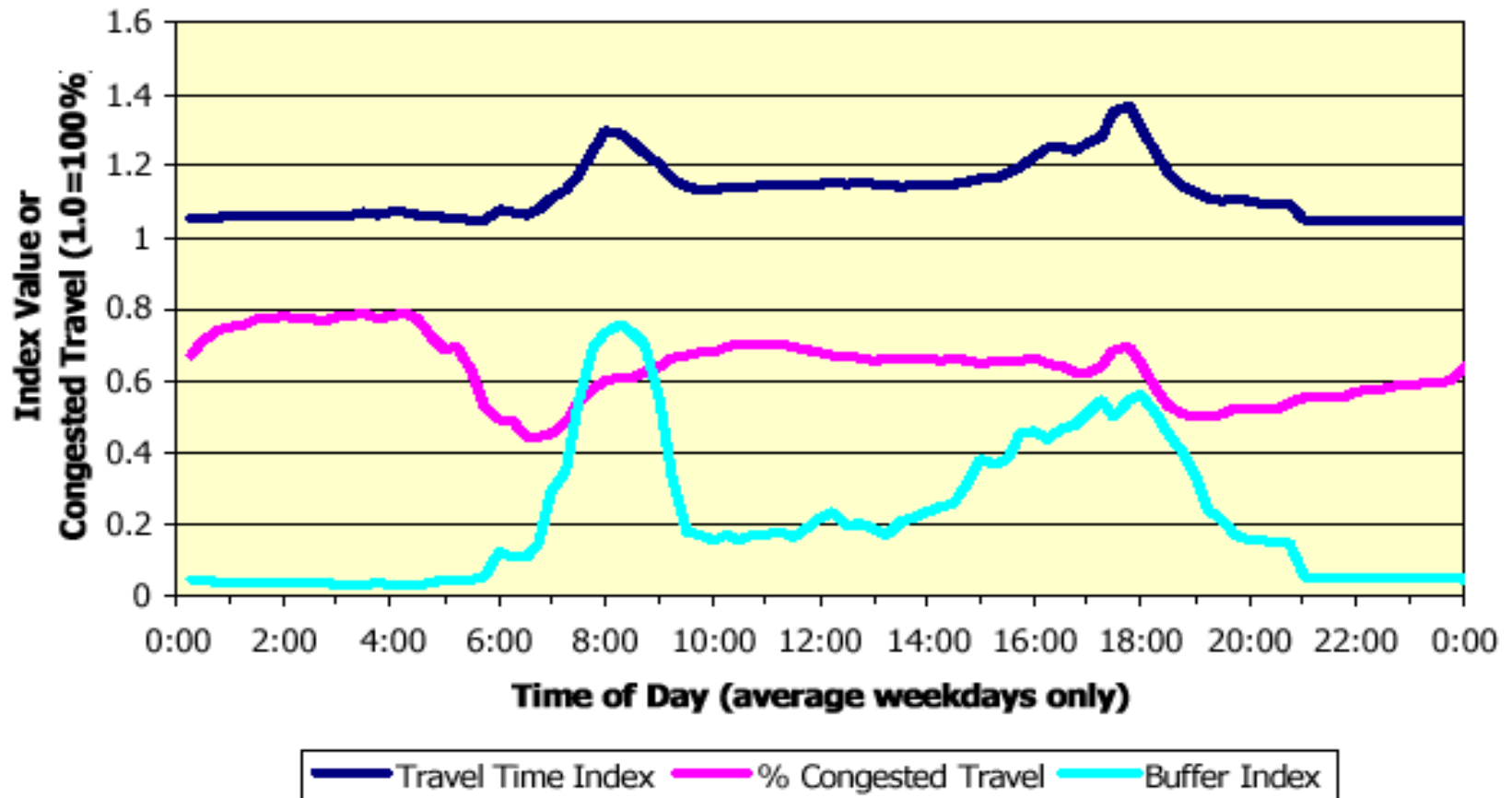
Exhibit B-7. Mobility and Reliability Measures by Time of an Average Day

ASTM Guide for ITS Data Archiving
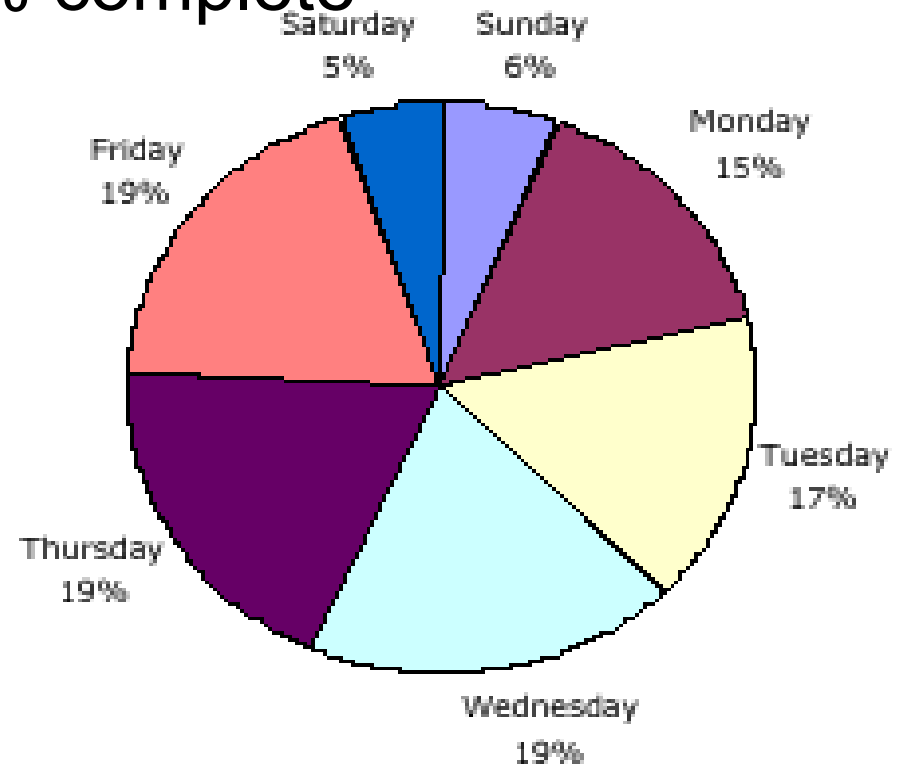
- Benefits of data archiving
- Data definitions
- Quality standards
- Audiences:
  - Novice/decision maker
  - Intermediate
  - Advanced
- Case studies
- Broad based group: AASHTO, FHWA, states, SAE

FHWA Analysis of ARTIMIS Data
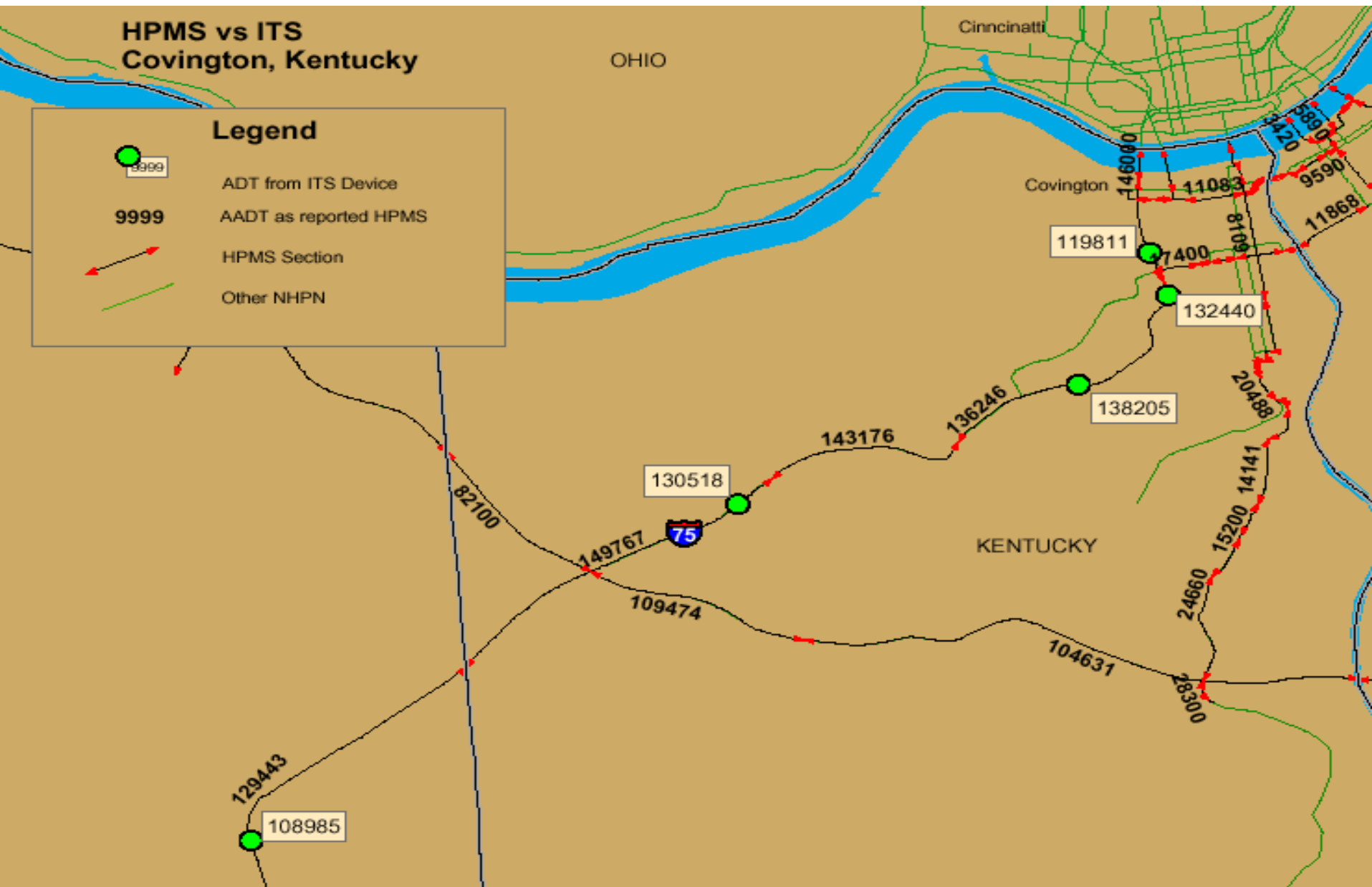
Feedback to Other ITS Systems

- ARTIMIS archived data plan will be the blueprint for both Kentucky and Ohio ITS system

- Other ITS systems "watching" ARTIMIS:

  – TRIMARC - Louisville Freeway Management System

  – Columbus Freeway Management System

  – Central Kentucky Congestion Management System

TRIMARC

Traffic Response and Incident Management Assisting the River Cities

Future Activities

- Implement New ARTIMIS Archived Data Plan: data formats, web page, GIS coverage, new equipment (?)

- Use of Mobility Performance Measures

- Feedback to other ITS Regional Management Systems

- Expansion of ARTIMIS: more interstate plus major arterial (US 25/US 42)

The Partners

- **ODOT:** David Gardner,Traffic Monitoring; George Saylor, ITS
- **KYTC:** Rob Bostrom, Archived Data; Dan Inabnitt, Traffic Monitoring; Nancy Albright, ITS
- **OKI:** Dory Montazemi, ITS
- **FHWA:** Ralph Gillman and Jeff Patten, Traffic Monitoring
- **City of Cincinnati**
- **TRW:** Scott Evans, ARTIMIS Project Manager

Conclusion

- ⌛ Thank you for your attention!
- ⌛ If you have questions or comments, please send email to:
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